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The pandemic and economic policy uncertainty

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Abstract

The events that occurred after the worldwide diffusion of COVID-19 provide a real-life example of how uncertainty can severely affect the global economy. This paper reviews literature on the negative impacts of the economic policy uncertainty index (EPU) as developed by Baker et al., The Quarterly Journal of Economics, 2016, 131, 1593-1636 on individuals, businesses, governments, and economies at the local and international levels. This reveals that a high EPU is associated with adverse effects on households, corporations, and governments, which tend to delay many financial decisions under high uncertainty, which leads to lower consumption, fewer issuances of debt, fewer investments, and higher unemployment. The effects of political and regulatory uncertainty also extend to the commodity markets, such as the adverse effects on both oil and gasoline markets, and can potentially create adverse impacts on the cryptocurrency market and its potential growth. We demonstrate that governmental uncertainty also affects financial, housing, and equity markets; debt issuances; and the entire economy. This underscores the importance of considering EPU as a risk factor. The association with several components of the global economy reflects not only the EPU index's critical influence, but also the importance of risk management. Our results lead us to consider the gravity of economic policy uncertainty and call for innovation across different sectors to mitigate its adverse effects.

KEYWORDS

Capital investment, corporate finance, economic policy uncertainty, macro-economic & microeconomics, risk management

1 | INTRODUCTION

As 2019 came to an end, the highly infectious novel coronavirus (hereafter, "COVID-19") spread rapidly from its origins in Wuhan, China. It impacted not only public health, but also the worldwide economy and its stability, ending an 11-year bull market. The world had not seen anything like this disease since the 1918 influenza pandemic, the effects of which were extrapolated by its uncertainty. The COVID-19 pandemic increased the

uncertainty in daily life (Caggiano, Castelnuovo, & Kima, 2020) due to several factors, including the uncertainty of the pandemic's duration, how it will consequently change the world, and whether another pandemic would impact the global economy. These unanswered issues increase uncertainty for both legislators and corporations. Further, this pandemic highlighted uncertainty's severe economic effects. Economic policies have been increasingly uncertain in previous decades due to several other factors, such as anti-globalization, and

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populist movements have increased worldwide since the preceding decade's global financial crises. The COVID-19 pandemic is one example of how uncertain economic policies distorted the vision for the economy, affect all market participants, and illustrate the global economy's interconnections.

This pandemic has also affected the world's supply and demand on both macro and microlevels. Forced closures of business and government-imposed quarantines, curfews, and travel bans have placed the world in a "Great Lockdown" that has impacted every sector. This also drastically reduced the labour market (Coibion, Gorodnichenko, & Weber, 2020) and the output of goods and services as a consequence. The uncertainty of this pandemic's duration has halted production worldwide, which has led oil markets to fall to an all time low, with crude futures traded at negative prices. Workers have also been laid off due to these indefinite closures and travel bans, and the unemployment rate in the United States reached 14.7% in April (Bureau of Labour Statistics, 2020), the highest since 1940. After a decade of expansions, the International Monetary Fund (IMF) is projecting considerably decreased global growth in 2020.

Having a useful measure that reflects the economy's levels of uncertainty is vital given that uncertainty can severely impact the entire economy; hence, this paper primarily aims to reflect the uniqueness of the economic policy uncertainty (EPU) index and the ongoing studies and findings from EPU literature that could provide more avenues for research. First, Baker, Bloom, Davis (2016) created a distinct EPU index that builds on and accounts for several factors, including prior measures of uncertainty. Collectively, this index attempts to reflect all sources of uncertainty within the economy, which made the index attractive to and widely cited by scholars from different fields. The EPU index has become prominent in the economic field in general as one of the best measures for uncertainty. Their index has also continuously evolved, as its founders are gradually adding new countries and sub-indices that account for specific types or sources of uncertainty.

This work also aims to illustrate the importance of the EPU as coined by Baker et al. (2016) to individuals, policymakers, corporations, and all market participants. This is especially vital after witnessing how the uncertainty from COVID-19 has affected both local and global economies. This paper first reviews literature on economic policy uncertainty's impacts on all market participants to commend the EPU's use in determining risk factors in decision-making processes. After underscoring its effects, we discuss how governments, policymakers, and corporations should act during high EPU to address such a challenge.

A thorough investigation of literature reveals that high EPU is associated with adverse effects on all components of the economic system. High uncertainty tends to stall many financial decisions at both the individual and corporate levels (Bloom, 2009, 2014). In other words, uncertainty pushes individuals and corporations to act more conservatively, which could lead to lower overall economic consumption and growth, fewer debt issuances, and higher unemployment (Bloom, 2009; Caggiano, Castelnuovo, & Figueres, 2017; Kahle & Stulz, 2013). This highlights why is it vital for governments to find avenues that would mitigate EPU's adverse consequences. High EPU also affects inflation rates (Jones & Olson, 2013) and the currency exchange markets (Balcilar, Gupta, Kyei, & Wohar, 2016); the housing market also experiences adverse effects (Alola & Uzuner, 2020). Further, the effects of governmental uncertainty extend to the commodity markets, as studies demonstrate that it adversely affects the oil (You, Guo, Zhu, & Tang, 2017), gasoline (Olanipekun, Olasehinde-Williams, & Saint Akadiri, 2019), and futures markets (Fang, Chen, Yu, & Xiong, 2018). Moreover, high EPU has potentially adverse effects on the crypto-currency market (Matkovskyy, Jalan, & Dowling, 2020).

These findings have led current scholars to agree that EPU negatively affects the economy. This consensus is based on numerous studies of different countries that employ different econometric techniques. This also reflects the importance of risk management and presents a call for innovation across different sectors to mitigate the adverse effects of EPU and uncertainty in general.

The remainder of this paper is organized as follows. Section 2 reviews the background on economic policy uncertainty in terms of its definitions and measurements, including a sub-section on COVID-19 and uncertainty. Section 3 is divided into two subsections as follows: Section 3.1 discusses why governments must consider EPU as a risk factor by reviewing the literature addressing its impact on macro- and micro-economies through the financial and commodity markets. Section 3.2 addresses the need for corporations to consider EPU by demonstrating its effects on stock market returns, corporate capital investments and spending, corporate finance, and risk management. Section 4 concludes.

2 | BACKGROUND

2.1 | What is economic policy uncertainty?

Economic policy uncertainty can be defined in various ways, but is broadly considered to denote the unanticipated changes that affect the economic system that could

lead to changes in governmental policies. In other words, it reflects the economy's fluctuations due to the unpredictability of fiscal, political, regulatory, and monetary policies. The unpredictability of economic and financial decisions under higher EPU could lead to the postponing of several decisions. For instance, high uncertainty from the failed coup in Turkey has pushed Moody's Investors Services to downgrade Turkey's credit rating (Davis, 2016). It is also clear how several corporations and countries are currently taking longer to make economic decisions due to the unpredictability of COVID-19.

Studies support this assertion by indicating that higher uncertainty leads to higher economic effects in recessions and downturns because of the delays in financial and consumption decisions (Baker et al., 2016). Many variables can affect the level of uncertainty, with shortor long-term effects; however, when EPU increases, its effects are expected to have long-term effects on investments and economic growth (Sahinoz & Erdogan Cosar, 2018). It is essential to develop measures to reflect a country's levels of uncertainty given that uncertainty severely impacts the entire economy.

2.2 | COVID-19 and uncertainty

The COVID-19 pandemic significantly increased levels of uncertainty in various aspects of daily life (Caggiano et al., 2020), and many aspects of the virus remain unknown to medical experts and epidemiologists (Fauci, Lane, & Redfield, 2020). No one knows when the world will return to normal, and it is unclear as to when a vaccine will be ready; this has pushed the authors to highlight the importance of global cooperation and its public, private, and non-profit sectors to produce a vaccine (Corey, Mascola, Fauci, & Collins, 2020; Gates, 2020). Many countries implemented different types of lockdowns and quarantine measures, which increased stress and panic (Qiu et al., 2020). Scarce medical supplies, including masks and ventilators, have led to a competition between different nations to accumulate them, which has pushed hospitals and health institutions to ration their inventories. These factors have triggered a spike in uncertainty worldwide.

Baker, Bloom, Davis, and Terry (2020) provide evidence that current uncertainty levels are much higher than those during the 2008–2009 Great Recession, and are closer to the level of the Great Depression in the United States. They also claim that most of the current economic slowdown is a product of the extremely high uncertainty due to the COVID-19 outbreak. Sharif, Aloui, and Yarovaya (2020) also confirm that COVID-19 has

significantly impacted political and regulatory uncertainty. Albulescu (2020) also observes that daily announcements regarding the number of infected and deaths positively affect the levels of EPU.

High uncertainty can complicate firms' activities, in that it can compel firms to postpone their investment decisions (Chu & Fang, 2020) and assume less debt (Dong, Liu, & Chang, 2019), which could create a more severe economic crisis; consequently, less cash is injected into the economy. Alternatively, Baker et al. (2020) reveal that no disease in history has had such forceful impacts on the stock market as COVID-19.

These findings strengthen the hypothesis that the uncertainty caused by COVID-19 has caused lower economic growth, above-average bankruptcy rates, and high unemployment rates. The disease has not caused these effects, but rather, the uncertainty that accompanies it by deterring government officials, corporate executives, and even individuals to make any decisions due to the magnitude of uncertainty from this pandemic. This has significantly complicated the decision-making process for executives in all sectors, whether private, public, or non-profit.

2.3 | Methodology of measuring economic policy uncertainty

The EPU index was built by considering previous efforts and indices that attempted to measure economic uncertainty, and is based on three different aspects to measure uncertainty: newspaper coverage, stock market volatility, and expectations as gathered from business surveys. As EPU is a comprehensive concept that focuses on unexpected shifts in the economic system, Baker et al. (2016) decided to measure more than one component in an attempt to cover all possible sources of unforeseen changes in the financial and economic system.

The first part of the index is based on newspaper coverage of topics related to governmental uncertainty in leading newspapers within each country covered by the index; this includes political and regulatory uncertainty coverage in the media. The second part of the index focuses on the documents published by the United States' Congressional Budget Office, and primarily those that cover new tax information. Specifically, changes in taxes—such as the expiration of some taxes in the subsequent 10 years—can affect the levels of EPU. The third part of the EPU index is based on the economic and financial forecasts from the Federal Reserve Bank, and focuses on the future expectations of macro-level variables, such as the consumer price index and governmental expenditures.

The index is available for many countries, although currently on a daily basis for only the United States and the United Kingdom, and on a monthly basis for 26 countries: Australia, Belgium, Brazil, Canada, Chile, China, Colombia, Croatia, France, Germany, Greece, Hong Kong, India, Ireland, Italy, Japan, South Korea, Mexico, the Netherlands, Pakistan, Russia, Singapore, Spain, Sweden, the United Kingdom, and the United States. Each of these indices is based on each country's different indexing and sources of policies, news, and taxes. The index's creators are still working on expanding the number of countries and constructing an index based on immigration concerns and other policy uncertainty variables. Davis (2016) builds on the work of Baker et al. (2016) to construct a unified global EPU index based on the weighted average of data of the most economically influential nations, with the argument that such nations cover most of the world's output.

As uncertainty significantly affects economic decisions at the individual, business, and government levels, such as investments and consumption, scholars are interested in a useful measure that reflects the level of EPU. Thus, they have used several methods to measure the approximate levels of uncertainty in the economy. One is the Chicago Board Options Exchange's implied volatility index (VIX), which reflects uncertainty in the equity market. Julio and Yook (2012) posited that a dummy variable should be used for election years given the new policies that are proposed at that time. Da, Engelberg, and Gao (2015) developed a "FEARS" index based on the views and fears of investors. Jurado, Ludvigson, and Ng (2015) used aggregate economic and financial variables to construct a macroeconomic uncertainty index; another popular avenue in constructing an economic uncertainty proxy is based on the information included in the Federal Reserve Bank's surveys and forecasts. Further, Manela and Moreira (2017) proposed the idea of using an index that is based on the text in newspapers. Hassan, Hollander, van Lent, and Tahoun (2019) proposed another proxy for economic uncertainty based on a text analysis of quarterly earnings conference calls. Scotti (2016) also proposed a real-time activity index based on two components: unexpected events, and the government and economy.

One factor that makes the EPU index unique and attractive for scholars from different fields is its public availability, as this ensures everyone can use it. The data available in the index begins in 1985, and originally reflected the levels of economic policy uncertainty in the United States. It was then expanded by gradually adding data for different countries. The index reflects large-scale spikes during economic downturns, such as the second Gulf War, the dot-com crisis, and the 2008–2009 Great Recession. Simultaneously, the index is highly associated

with many of the previous measures used as proxies to measure uncertainty. These factors have led researchers in the field to use the index and cite it more than 4,000 times.

The EPU index is also distinguished by its continuous evolution, as its creators are continually adding to the index; for example, one new addition involves the introduction of categorical EPU data based exclusively on data gathered from news media, which has been organized into several sub-indices. Categorical EPU data are currently available for only the United States, Greece, and Japan. Its various categorical sub-indices for the United States include monetary policies, taxes, fiscal policies, government spending, healthcare, national security entitlement programs, regulations, financial regulations, trade policies, and sovereign debt. This can help scholars who are interested in data on these specific sub-indices.

Another addition to the EPU index includes Twitter-based uncertainty indices, which are based on all English tweets since January 1, 2010, and include any keywords related to uncertainty, the economy, and the equity markets. Other additions to the index include the Infectious Disease Equity Market Volatility index, which is also newspaper-based and tracks infectious disease news' effects on the equity markets. Moreover, one new index assesses how recently increased migration rates have contributed to increasing uncertainty, mostly in Europe. They also provide indexes related to trade policies, world uncertainty, financial stress, firm-level political risk, geopolitical risk, and firm-level uncertainty.

The EPU index's founders collectively built on all preceding efforts and measures to construct the EPU index. Hence, this paper aims to highlight empirical EPU research. The accessibility of the publicly available EPU index has popularized EPU as a research topic, which has compelled us to focus on previous efforts in this field to help scholars to identify any uninvestigated avenues and questions.

3 | LITERATURE REVIEW

While reviewing the EPU index's economic impacts, we focused on both governments and corporations. The following two sections will examine why governments and corporations should consider EPU as a risk factor by reviewing the literature addressing its impact on macroand micro-economies through the financial and commodity markets. We then determine how the EPU affects financial and commodity markets in addition to corporate finance and other corporate decisions by reviewing its effects on stock market returns; corporate capital finance; investments, spending, and and risk management.

3.1 Why should governments consider EPU as a risk factor?

The current COVID-19 outbreak highlights the importance of governments discovering avenues to mitigate their national uncertainty. Modern EPU literature provides ample evidence of how levels of uncertainty can adversely affect different aspects of the economy, such as the commodities, financial, and housing markets, and debt, among others. This highlights the importance of a severe approach to decreasing uncertainty.

Literature offers evidence of the different avenues through which EPU can affect the economy. For instance, Davis (2016) observes that designing complicated governmental systems and programs can increase uncertainty; this highlights the importance of simplifying regulatory systems to create predictability, which will decrease uncertainty. One example in the United States involves simplifying the tax code, as it is one of the more complicated tax systems worldwide. Similarly, literature proves a positive association exists between levels of uncertainty and corruption (Goel & Ram, 2013; Goel & Saunoris, 2017).

High uncertainty can also lead to higher unemployment rates, and can affect personal investment and consumption decisions, as consumers typically focus on necessities during periods of high uncertainty and recessions (Bernanke, 1983). Thus, significantly less spending and investments occur, and are less attractive under high uncertainty. This translates into the decreased production of goods, economic output, and total wealth. Bloom (2009) also indicates that high uncertainty can negatively affect economic growth.

It is difficult for individuals, households, and corporations to make appropriate economic decisions without proper, transparent economic policies. Bekaert, Hoerova, and Lo Duca (2013) note that EPU has impacts on monetary policy; further, EPU is responsible for significant volatility in unemployment (Caggiano et al., 2017). Consequently, some scholars have argued that uncertainty shocks have more predictive power than monetary policy in predicting and understanding unemployment rates, and primarily during economic downturns (Caggiano, Castelnuovo, & Groshenny, 2014). Monetary policy uncertainty also impacts the financial markets and exchange rates (Mueller, Tahbaz-Salehi, & Vedolin, 2017). Uncertainty about fiscal policies also impacts overall economic activity (Fernández-Villaverde, Guerrón-Quintana, Kuester, & Rubio-Ramírez, 2015). The 2008-2009 Great Recession led to high economic and financial uncertainty that translated into volatility in corporate production and a decline in labour (Arellano, Bai, & Kehoe, 2019).

The association between EPU and both production and inflation is harmful to both variables (Jones & Olson, 2013). Further, Leduc and Liu (2016) also empirically support the finding that times of high EPU tend to produce low inflation and high unemployment. Similarly, Pierce and Schott (2016) demonstrate that uncertainty's effects on employment are conditional given the extent to which the industry is exposed to international trade, as a higher exposure to international trade leads to increased effects.

Dai, Zhang, Yu, and Li (2017) also note that EPU influences exchange rates, as higher uncertainty is associated with more fluctuations and currency risk. Balcilar, Gupta, Kyei, and Wohar (2016) also confirm that uncertainty can increase instability in the currency exchange market, which compels them to claim that uncertainty levels have some predictive power when forecasting the returns on investments in currency exchange rates. Mueller et al. (2017) also demonstrate that monetary policy uncertainty is associated with adverse effects in the financial and currency exchange markets.

Generally, EPU creates both micro- and macro-level economic effects; specifically, increasing the EPU deters households, governments, and corporations from investments and spending. These effects highlight that governments are critical in designing straightforward policy systems that decrease economic uncertainty, as these systems can be vital in combating surges in uncertainty that affect local, regional, and global economies.

3.1.1 | Financial markets and political risk

On the one hand, increasing EPU leads to higher volatility in the overall economy and market; Brogaard and Detzel (2015) argue that the EPU index could serve as a proxy to help forecast financial market returns. On the other hand, some scholars argue that increased uncertainty should be treated as a risk factor (Hogue & Zaidi, 2019) given EPU's negative impacts on the overall market and economy (Pástor & Veronesi, 2012). Several studies show that periods of high uncertainty are associated with lower returns (Hoque & Zaidi, 2019; Pástor & Veronesi, 2012), lower stock prices (Pástor & Veronesi, 2013), and lower valuations of banks. Lui et al. (2018) demonstrated that higher EPU reduces the debt issued to China's private firms, but such an association does not exist among state-owned firms. Alola and Uzuner (2020) discover evidence that uncertainty could also affect pricing in the housing market.

Nagar, Schoenfeld, and Wellman (2019) indicate that uncertainty levels affect trading activities, the information available to investors, and disclosures. They find that higher levels of uncertainty lead to more voluntary disclosures—however, information asymmetry also increases during periods of uncertainty. Nevertheless, Christou, Cunado, Gupta, and Hassapis (2017) determine that EPU's impact differs based on the economy's durability and the stock market's size. Carrière-Swallow and Céspedes (2013) observe that this impact is much higher in emerging markets. Simultaneously, the risks of uncertainty can spill over among various countries or regions (Choudhry, Hassan, & Shabi, 2020).

One particular stream of research focuses on political uncertainty's macro-level effects on financial markets to reveal that EPU peaks during presidential election periods (Baker & Bloom, 2013; Julio & Yook, 2012). Simultaneously, the levels of investments, debt, and equity issuances among firms decrease before the election, but increase later (Jens, 2017). These findings correlate with Julio and Yook's (2012) results. Along this same stream of research, Boutchkova, Doshi, Durnev, and Molchanov's (2012) findings highlight how uncertainty regarding political outcomes can challenge various corporations. These authors demonstrate that government instability and global political risk could lead to fewer freedoms and less efficiency and flexibility in the business environment. Moreover, corporations that function in environments with high political risk decrease their hiring and investment activities. Alternatively, businesses may attempt to reduce the risks and effects of uncertainties by increasing their spending on lobbying (Hassan et al., 2019); this could allow them to at least partially manage their uncertainty by supporting individuals that aim for outcomes closer to their desires. These findings all highlight uncertainty as a severe risk factor.

3.1.2 | Commodity markets

The effects of EPU extend to several other components of the economy. Matkovskyy et al. (2020) provide evidence that high EPU leads to more volatility in the bitcoin market. On the other hand, Wu, Tong, Yang, and Derbali (2019) indicate that neither bitcoin nor gold are sufficient safe havens during high policy uncertainty, although they do observe that the bitcoin market is more responsive to changes in the EPU index. For example, gold has been relatively more stable during the COVID-19 pandemic as a safe haven than bitcoin, even under high EPU.

In contrast, Wang, Xie, Wen, and Zhao (2019) provide evidence that the effects of EPU do not spill over to the bitcoin market, which compelled these authors to argue that bitcoin can be a haven during high uncertainty. Demir, Gozgor, Lau, and Vigne (2018) also argue that bitcoin could serve as a haven during high EPU. This discrepancy in the results reflects an open avenue for further research in the relationship between EPU and the cryptocurrency market.

Rehman (2018) reveals evidence that oil can be another variable to predict some shocks in EPU; further, evidence also exists that high EPU can negatively affect the oil market (You et al., 2017). Moreover, Fang et al. (2018) also note that high uncertainty can also affect long-term oil stocks, and these authors argue that the oil futures market is not a suitable investment option under high EPU. This argument correlates with recent events in the US futures market when oil prices became negative.

Olanipekun et al. (2019) observe that EPU can directly affect gasoline prices, with other evidence in literature that higher uncertainty could lead to lower returns from oil and gas corporations (Kang, de Gracia, & Ratti, 2017). Moreover, Balcilar, Bekiros, and Gupta (2017) indicate that EPU can help in predicting oil markets' returns, while Yang (2019) claims EPU conveys information to influence oil prices, which could directly affect oil prices.

These findings are essential and highlight the importance of governments realizing how uncertainty can adversely affect some commodity markets. Several governments worldwide are currently dependent on oil as a primary revenue source, such as those on the Gulf Cooperation Council). The previous examples reveal that uncertainty could significantly affect petroleum markets, highlighting the importance of such oil-dependent governments' pursuit of avenues to decrease their levels of uncertainty and diversify their sources of income.

3.2 | Why should corporations consider EPU as a risk factor?

Related literature and the previous sections in this paper have demonstrated how EPU can severely impact entire economies in general, and corporations in particular as one component of that economy. Balcilar, Gupta, and Segnon (2016) observe that high EPU occurs during recessions, while low EPU occurs during economic booms. The decreased economic growth due to EPU decreases the overall wealth in the economy and lowers corporate profitability. As cash flow uncertainties decrease, firms' profitability is also expected to decrease (Kahle & Stulz, 2013; Mian & Sufi, 2010).

Kelly, Pástor, and Veronesi (2016) also indicate that uncertainty is an essential component of risk management, in that corporations bear the high costs of political uncertainty, while these are adequately priced in the equity options market. These authors note that political uncertainty has more severe effects on weaker economies, and that these could spill over from one country to another. Thus, the severity of uncertainty's effects on corporations and the economy depends on the levels of uncertainty and the country's size.

High uncertainty is also associated with the postponement of investment and other major decisions, as well as the ceasing or slowdown of corporate hiring (Bloom, 2014). The poor overall economic prospects associated with EPU can increase risk premiums, which can lead to increased borrowing costs and decreased corporate productivity (Brunnermeier, 2009). Simultaneously, EPU could also affect bank credit growth. Bordo et al. (2016) revealed a negative association between banks' credit growth and EPU, indicating that various levels of uncertainty can affect banking and financing.

3.2.1 | Corporate investments, debt issuances, and spending

High uncertainty can also affect corporations and the banking sector; namely, policy uncertainty can negatively affect foreign investments. The levels of spending and borrowing among corporations decline sharply during economic downturns and at times of high uncertainty (Kahle & Stulz, 2013). Moreover, Gulen and Ion (2016) demonstrate that corporate capital investments decreased by approximately 32% during the 2008-2009 Great Recession, which confirms that EPU affects corporate investments. The same study observed that these effects are more severe for corporations that depend more on governmental contracts. This correlates with Rodrik's (1991) findings, in that firms in emerging economies typically decrease their investments due to uncertainty. Alternatively, another study shows that an increase in policy uncertainty could lead to a long-term increase in capital costs, which could decrease both production and investments (Jeong, 2002); thus, EPU can even affect corporations' production levels in many countries worldwide.

Colombo (2013) notes that the impacts of EPU can spill over from one country to another, in that an EPU shock in the United States can lead to lower production levels and prices in Europe. This confirms the argument that corporations act conservatively under high uncertainty (Kim & Kung, 2016), which could compel companies to postpone or even cancel some of their future projects. Simultaneously, other studies indicate that the effects of EPU depend on several factors, including the firm (Yu, Fang, Du, & Yan, 2017) and the country in which the company functions (Boutchkova et al., 2012).

Further, Carrière-Swallow and Céspedes (2013) demonstrate that emerging markets witness more severe effects from EPU. Kang, Lee, and Ratti (2014) posit that the firm's size is also significant, as uncertainty has less severe effects on large corporations.

Literature reveals some avenues that could help firms to mitigate the effects of EPU. For example, Wang, Chen, and Huang (2014) note that Chinese firms use internal financing to decrease the effects of uncertainty. Simultaneously, companies that depend less on the government witness fewer effects from EPU; thus, companies can consider these options if they plan to reduce the risks of uncertainty.

While multiple avenues exist in which EPU can affect corporations, literature reveals that EPU's adverse effects on corporations hold in different countries as well as in countries with different developed or developing economies. Higher EPU can decrease corporate investments, corporate borrowing, and spending from individuals and households, which could decrease companies' profitability for companies.

3.2.2 | Corporate finance and risk management

Uncertainty also has different effects on corporate and financial management actions in various parts of firms, and two effects on corporate policies in particular. Internally, increasing the EPU can lead lower-level managers to take less risk. Therefore, management overall will act more conservatively and became more risk-averse when government policies are unclear, regardless of the country. As a result, firms implement and engage with less risky projects during times of high uncertainty given insider decisions. Conversely, outsiders pressure firms in multiple ways, such as changes in taxes policies and regulations or the introduction of new laws. Uncertainty about governmental policies decreases the economy's supply of capital and increases friction in financial markets. These effects have both occurred during the spread of the COVID-19 pandemic. For example, corporations under high EPU during COVID-19 have chosen to be more conservative, or have been forced to become so due to market conditions (Bloom, 2009, 2014).

Under high EPU, the costs of financing, mergers and acquisitions, and IPOs are all negatively affected, and financing costs in particular (Colak, Durnev, & Qian, 2017; Jens, 2017; Kelly et al., 2016; Pástor & Veronesi, 2012, 2013), which is vital as corporations hold increasing amounts of debt. Mergers and acquisitions are also negatively affected during times of high uncertainty, with two primary changes that emerge: the quantity of such

transactions decrease, while the amount of time required to complete these processes increases (Bonaime, Gulen, & Ion, 2018; Nguyen & Phan, 2017). Uncertainty also affects valuations by affecting the size and type of associated payments. Deals tend to be made with stock and smaller premiums are paid (Nguyen & Phan, 2017). This is especially the case as it becomes more challenging to value firms in such times of uncertainty. Further, higher levels of political uncertainty lead to fewer IPOs and lower prices (Colak et al., 2017). This effect is amplified when state governments have more influence on the local economy and a company's larger geographical exposure.

Im, Park, and Zhao (2017) demonstrate that uncertainty significantly impacts a firm's cash holdings and dividends; under high uncertainty, firms hold more cash (Li, 2019). Cash is more valued during these times as a precautionary measure for both firms and investors. This was also witnessed during the COVID-19 pandemic, whether through firms' voluntary actions or involuntarily mandated by regulators. Mollagholamali, Javadi, and Al-Thaqeb (2015) support the same finding in US markets, but use a larger sample of 19 international markets to support the twin-agency theory, in which firms hold less cash and pay more dividends during times of uncertainty to avoid agency risks and reduce government expropriation (Xu, Chen, Xu, & Chan, 2016).

Corporate decisions and policies tend to be more riskaverse under uncertainty, a tendency based on senior management's risk aversion that positively relates to the levels of uncertainty. In addition to such aversion, uncertainty regarding future cash flows can decrease profitability. Further, some firms tend to have conservative payout policies during high uncertainty (Kahle & Stulz, 2013).

However, EPU's adverse effects are not limited to corporate policies, but apply to a firm's innovation. Bhattacharya, Hsu, Tian, and Xu (2017) empirically show that innovation activities significantly decreased during high uncertainty. Their work argues that political and policy-related uncertainty reduces innovation, which is evident in the decreased number of patents and citations near election years and periods of higher EPU.

Overall, literature demonstrates that firms are more conservative and risk-averse in their decisions during high EPU. Prior research also reveals that a high EPU index also negatively influences capital expenditures, mergers and acquisition activities, payout policies and payouts, cash holdings, and innovation. The COVID-19 pandemic clearly illustrates these effects worldwide. Thus, policymakers and legislators should carefully analyze the phenomenon to create new rules structured to help businesses and individuals avoid uncertainty's negative influence on corporate actions. As EPU affects the prices of commodities, currencies, and securities, firms

must monitor uncertainty and include it in their risk profiles. This field includes a real need for innovation given that firms and individuals do not hedge the risks of political uncertainty, despite the minimal cost of doing so. Moreover, corporations and lawmakers worldwide must find tools and strategies to mitigate and manage the risks of EPU to limit or offset the losses caused by such fluctuations.

4 | CONCLUSION

This study surveys literature regarding the seminal EPU index developed by Baker et al. (2016). The current global events after the COVID-19 outbreak—or specifically, how these increased uncertainty—help highlight how uncertainty can severely affect all components of the global economy. However, uncertainty is a product of pandemics as well as economic crises, such as the 2008 Great Recession and the dot-com bubble; wars are also associated with high uncertainty. This study provides a thorough background on how the EPU index was developed based on most prior uncertainty measures and proxies used in literature to provide a reliable measure of uncertainty. The study also covers the current evolutions and advancements of the EPU index.

This thorough analysis of literature reveals that the EPU index should be taken seriously as an indicator of risk by governments and corporations. Governments must consider uncertainty as a risk factor because severe issues accompany higher EPU levels that can cause distress on both macro- and micro-levels, such as higher unemployment, slower economic growth, and decreased investments in any given economy. Uncertain monetary policies can also impact currency exchange rates. The ripple effect from high EPU can also reach the commodities market, which is an essential pillar in many economies. Devastated commodity prices can affect an entire country's budget, and particularly countries that highly depend on those commodities. Thus, governments should design clearer, simpler policies to decrease uncertainty and minimize the previously mentioned consequences.

However, high EPU also affects corporations: as uncertainty increases, corporate investments, debt issuances, and spending all sharply decrease. Corporations tend to be more risk-averse in these situations and more cautious in decision-making—all negative attributes associated with high EPU. Literature also reveals that high EPU can lead to fewer mergers and acquisitions, major projects can be placed on hold, and many contracts could be terminated. Innovation may even stagnate during these times. Consequently, corporations must consider EPU in their risk departments and include it in their risk

profiles. These firms should also consider hedging against the risks that accompany high levels of EPU.

As literature is still evolving, several available avenues can still provide more answers on how EPU could affect the economy. For instance, a discrepancy exists in the findings on how EPU affects the crypto-currency market that could serve as an open avenue for further research. Simultaneously, several credit-ratings agencies have continued to review and change credit ratings of several corporations and governments worldwide. This illustrates another available research avenue regarding whether any association exists between EPU levels and credit ratings at the corporate or government levels. Further, is there any innovative method to decrease the uncertainty surrounding sovereign credit ratings?

The EPU index's uniqueness and strength motivated us to write this study and present the findings from EPU literature. The information in this study clearly highlights that policymakers and decision-makers in the private and public sectors should focus more on how uncertainty can affect their organizations. This work also provides more avenues for future research and risk management innovation as it relates to uncertainty.

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